Studies on the Enhancement of Meat Productivity by Improvement of Feeding and Nutrition for Korean Native Cattle

Expt III. Studies on Nutrients Requirement of Korean Bull for Growing and Fattening

Kang Shik Kim
Bureau of Livestock, MAF, Seoul, Korea

Summary

Nutrients requirement of Korean native bull for growing and fattening was investigated.
The objective of this experiment was to examine the amount of nutrients requirement of Korean native cattle for growing and fattening. Calves were raised on calf-starter until 3 months after birth for developing the rumen. Of the calves 30 heads were selected for the experiment when they were 9 months of age with the following conditions: average daily gain, 0.5—0.7kg; average body weight, 175kg.

The experimental design consisted of 2 levels of DCP (90, 100%) and 3 levels of TDN(3 0, 100, 120%) based on the Nutrient Requirement of Beef Cattle in NRC (1970) as follows:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>DCP (%)</th>
<th>TDN (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (T1)</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>2 (T2)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3 (T3)</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>4 (T4)</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>5 (T5)</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>6 (T6)</td>
<td>90</td>
<td>120</td>
</tr>
</tbody>
</table>

The total fattening period was 270 days, and the results obtained are summarized as follows:

1) The body weight gains were significantly affected by the levels of TDN, however the effect of DCP levels was insignificant. Average daily gain of T1, T2, T3, T4, T5 and T6 for early fattening period (1—90days), middle fattening period (90—180 days) and last fattening period (181—270 days) were 0.66, 0.89, 0.78; 1.01, 0.96, 0.87; 1.17, 1.08, 0.89; 0.69, 0.96, 0.77; 0.93, 0.89; 1.08, 1.06, 0.94kg, respectively. Generally, the average daily gain during the last fattening period was lower than early fattening period.

2) The body weight (T) of the Korean native bulls during experimental period was estimated from age in month (X). The linear regression equation was fitted to data with highly significant (p<0.01) correlation coefficients(r) as follows:

   \[ T = 24.31X - 48.67 \]  

   \[ r = 0.998^{**} \]
$T_2: Y = 28.43X - 76.91 \quad (r=0.998^{**})$

$T_3: Y = 31.25X - 92.44 \quad (r=0.998^{**})$

$T_4: Y = 25.15X - 53.55 \quad (r=0.998^{**})$

$T_5: Y = 27.84X - 67.29 \quad (r=0.998^{**})$

$T_6: Y = 31.29X - 102.93 \quad (r=0.999^{**})$

(3) The dry matter (DM) intakes increased as the level of TDN increased. The daily DM intake (Y) was significantly correlated with age in month (X), and the linear regression equations were:

$T_1: Y = 0.364X + 1.047 \quad (r=0.953^{**})$

$T_2: Y = 0.313X + 2.215 \quad (r=0.961^{**})$

$T_3: Y = 0.205X + 3.078 \quad (r=0.934^{**})$

$T_4: Y = 0.205X + 0.948 \quad (r=0.934^{**})$

$T_5: Y = 0.316X + 2.603 \quad (r=0.961^{**})$

$T_6: Y = 0.395X + 1.480 \quad (r=0.955^{**})$

(4) The relationship between DM intake and body weight was linear and curvilinear, and its correlation coefficients were highly significant ($p<0.01$).

(5) The daily TDN intake (Y) was increased as the TDN level increased and as the fattening stage progressed. The daily TDN intake was significantly ($p<0.01$) correlated with age in month (X) and the regression equations were:

$T_1: Y = 0.25X + 0.525 \quad (r=0.952^{**})$

$T_2: Y = 0.302X + 0.801 \quad (r=0.960^{**})$

$T_3: Y = 0.379X + 0.331 \quad (r=0.947^{**})$

$T_4: Y = 0.241X + 0.625 \quad (r=0.953^{**})$

$T_5: Y = 0.314X + 0.725 \quad (r=0.957^{**})$

$T_6: Y = 0.380X + 0.243 \quad (r=0.957^{**})$

(6) The TDN intake and body weight was linear and curvilinear relationship with highly significant ($p<0.01$) for all treatments. The amount of TDN required per unit gain increased as the stage of fattening progressed.

(7) The linear regression equation between DCP intake and body weight was derived with highly significant ($p<0.01$) correlation coefficients for all treatments.

(8) The DCP requirement (kg) was determined by the multiple regression equation, $Y = 0.0016X_1 + 0.0899X_2 - 0.3785 \quad (r=0.34)$ where $X_1$ equaled to the metabolic body weight and $X_2$ equaled to daily gain (kg).

(9) The TDN requirement was calculated by multiple regression equation, $Y = 0.067X_1 + 2.5795X_2 - 1.870 \quad (r=0.910)$ where $X_1$ equaled to the metabolic body weight and $X_2$ equaled to daily gain.

The TDN requirement of the bulls for 200, 250, 300, 350, 400 and 450kg body weight having 1.0kg daily gain were 4.3, 4.9, 5.6, 6.2, 6.7 and 7.3kg, respectively.

I. 動物

韓牛의 肥育 試験으로서는 1926~1938년에 魚牛을 사용하여 魚牛의 肉 生産 能力を 調査한 報告書이고 그 후 論(1963)에 의하여 肥育小牛의 에너지와 蛋白質

合並한 関連事項 肥育試験 超(1967)等에 의한 魚牛去

勧牛의 90日，150일，200日間の 肥育試験 金(1971)等

의 魚牛 去勧牛에 methyl Thiouacil의 給與效果를 検討한 論文等이 있다。

現在까지 魚牛의 肥育에 適用되는 飼養標準으로서는 ケトベリ，NRC等의 肉牛 飼養標準이 있고

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